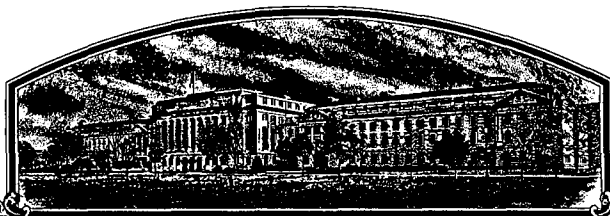


No.

8700137



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Holden's Foundation Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (T. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN

'LH61'

In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D. C.
this 11th day of March in
the year of our Lord one thousand nine
hundred and eighty-eight.

Attest

Fennell H. Hens
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Lyng
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

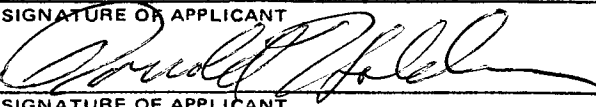
1. NAME OF APPLICANT(S) Holden's Foundation Seeds, Inc.		2. TEMPORARY DESIGNATION Ex1170		3. VARIETY NAME LH61	
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) R.R.#2, Box 839 Williamsburg, IA 52361		5. PHONE (Include area code) 319-668-1100		FOR OFFICIAL USE ONLY PVPO NUMBER 8700137	
6. GENUS AND SPECIES NAME Zea Mays		7. FAMILY NAME (Botanical) Gramineae		FILING DATE May 15, 1987 TIME 1:45 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.	
8. KIND NAME Corn, Field		9. DATE OF DETERMINATION November 1985		AMOUNT FOR FILING \$ 1800.00 DATE May 15, 1987 AMOUNT FOR CERTIFICATE \$ 200.00 DATE Feb. 17, 1988	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation				12. DATE OF INCORPORATION 1968	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa				12. DATE OF INCORPORATION 1968	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Mark Armstrong P.O. Box 839 Williamsburg, IA 52361 PHONE (Include area code): 319-668-1100					
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement. c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.) d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety. e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership.					
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No					
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified			
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S. <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No					
19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No					
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT 				DATE May 11, 1987	
SIGNATURE OF APPLICANT				DATE 1	

Exhibit A

8700137

Origin and Breeding History of the Inbred

LH61=EX1170=ASA X (M017)3

Row No.	Pedigree	Location	Year
-----	-----	-----	-----
South Amana Farm	LH61	Iowa	1986
Newhart	LH61	Hawaii	1985-86
5136-5145	Ex1170	Iowa	1985
15630	ASA x (Mo17)3 @7	Iowa	1984
8160	ASA x Mo17)3 @6	Hawaii	1983-84
16132	ASA x Mo17)3 @5	Iowa	1983
13040	ASA x Mo17)3 @4	Hawaii	1982-83
26089	ASA x Mo17)3 @3	Iowa	1982
5379	ASA x Mo17)3 @2	Hawaii	1981-82
869	ASA x Mo17)3 @1	Iowa	1981
2653	ASA x (Mo17)4	Iowa	1980
304-311	Mo17(ASA x Mo17	Hawaii	1979-80
2925,2927,2804	Mo17 x (Mo17 x ASA)Mo17	Iowa	1979
13192,13196	Mo17 x ASA)(Mo17	Iowa	1978

Exhibit A

Uniformity Statement

I have observed 'LH61' during the last three generations it has been increased, 1985 Iowa nursery rows 5136-5145, 1985-86 Newhart Field Hawaii and 1986 South Amana Field Iowa. In each of these increases seeds from the previous generations were planted. The line is very stable, uniform, and free of variance from within the population.



Art Johnson
Plant Breeder

Exhibit B

The Novelty Statement

'LH61' most clearly resembles 'LH54'; however, the most distinguishing characteristic is the ear shoot. During pollination the top ear shoot of 'LH61' develops a purple mark on the otherwise green husk. The husk color of 'LH54' is green and the purple mark is absent.



Photograph 1



Photograph 2

Photograph 1 above shows the purple mark on the husk of 'LH61'. 'LH54' pictured in photograph 2 has a green husk with no purple marking.

OBJECTIVE DESCRIPTION OF VARIETY
CORN (ZEA MAYS)

NAME OF APPLICANT(S)

Holden's Foundation Seeds, Inc.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

R.R.#2, Box 839
Williamsburg, Iowa 52361

FOR OFFICIAL USE ONLY

PVPO NUMBER

8700137

VARIETY NAME OR TEMPORARY
DESIGNATION

LH61

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., or) when number is either 99 or less or 9 or less.

1. TYPE:

1 = SWEET

2 = DENT

3 = FLINT

4 = FLOUR

5 = POP

6 = ORNAMENTAL

2. REGION WHERE BEST ADAPTED IN THE U.S.A.:

1 = NORTHWEST

2 = NORTHCENTRAL

3 = NORTHEAST

4 = SOUTHEAST

5 = SOUTHCENTRAL

6 = SOUTHWEST

7 = MOST REGIONS

3. MATURITY (In Region of Best Adaptability):

(Under "comments" (pg. 3) state how
heat units were calculated)

DAYS FROM EMERGENCE TO 50% OF PLANTS IN SILK

HEAT UNITS

DAYS FROM 50% SILK TO OPTIMUM EDIBLE QUALITY

HEAT UNITS

DAYS FROM 50% SILK TO HARVEST AT 25% KERNEL MOISTURE

HEAT UNITS

4. PLANT:

CM. HEIGHT (To tassel tip)

CM. EAR HEIGHT (To base of top ear)

CM. LENGTH OF TOP EAR INTERNODE

Number of Tillers:

1 = NONE

2 = 1-2

3 = 2-3

4 = > 3

Number of Ears Per Stalk:

1 = SINGLE

2 = SLIGHT TWO-EAR TENDENCY

3 = STRONG TWO-EAR TENDENCY 4 = THREE-EAR TENDENCY

Cytoplasm Type:

1 = NORMAL

2 = "T"

3 = "S"

4 = "C"

5 = OTHER (Specify)

5. LEAF (Field Corn Inbred Examples Given):

Color:

5GU 4/4 Munsell Color Charts for Plant Tissues

1 = LIGHT GREEN (HY)

2 = MEDIUM GREEN (WF9)

3 = DARK GREEN (B14)

4 = VERY DARK GREEN (K166)

Angle from Stalk (Upper half):

1 = < 30°

2 = 30-60°

3 = > 60°

Sheath Pubescence:

1 = LIGHT (W22)

2 = MEDIUM (WF9)

3 = HEAVY (OH26)

Marginal Waves:

1 = NONE (HY)

2 = FEW (WF9)

3 = MANY (OH7L)

Longitudinal Creases:

1 = ABSENT (OH51)

2 = FEW (OH56A)

3 = MANY (PA11)

Width:

CM. WIDEST POINT OF EAR NODE LEAF

Length:

CM. EAR NODE LEAF

NUMBER OF LEAVES PER MATURE PLANT

6. TASSEL:

05

NUMBER OF LATERAL BRANCHES

Branch Angle from Central Spike:

2

1 = < 30°

2 = 30-40°

3 = > 45°

Penduncle Length:

07

CM. FROM TOP LEAF TO BASAL BRANCHES

Pollen Shed:

2

1 = LIGHT (WF9)

2 = MEDIUM

3 = HEAVY (KY21)

6

Anther Color:

1 = YELLOW

2 = PINK

3 = RED

4 = PURPLE

5 = GREEN

6

Glume Color:

6 = OTHER (Specify)

pink & yellow

green w/red ring at base

Pollen Restoration for Cytoplasm (o = Not Tested, 1 = Partial, 2 = Good)

0

"T"

0

"S"

0

"C"

0

OTHER (Specify Cytoplasm and degrees of restoration)

7. EAR (Husked Ear Data Except When Stated Otherwise):

18

CM LENGTH

38

MM. MID-POINT
DIAMETER

117

GM. WEIGHT

Kernel Rows:

2

1 = INDISTINCT

2 = DISTINCT

12

NUMBER

1

1 = STRAIGHT

2 = SLIGHTLY CURVED

3 = SPIRAL

Silk Color (Exposed at Silking Stage):

3

1 = GREEN

2 = PINK

3 = SALMON

4 = RED

Husk Color:

1&5

FRESH

1 = LIGHT GREEN

2 = DARK GREEN

3 = PINK

6

DRY

4 = RED

5 = PURPLE

6 = BUFF

Husk Extention: (Harvest Stage)

2

1 = SHORT (Ears Exposed) 2 = MEDIUM (Barely Covering Ear)

3 = LONG (8-10CM Beyond Ear Tip)

4 = VERY LONG (> 10 CM)

Husk Leaf:

1

1 = SHORT (< 8 CM)

2 = MEDIUM (8-15 CM)

3 = LONG (> 15 CM)

Shank:

10

CM LONG

6

NO. OF INTERNODES

Position at Dry Husk Stage:

1

1 = UPRIGHT

2 = HORIZONTAL

3 = PENDENT

Taper:

1

1 = SLIGHT

2 = AVERAGE

3 = EXTREME

Drying Time (Unhusked Ear):

2

1 = SLOW

2 = AVERAGE

3 = FAST

8. KERNEL (Dried):

Size (From Ear Mid-Point):

10

MM LONG

09

MM. WIDE

04

MM. THICK

Shape Grade (% Rounds)

4

1 = < 20

2 = 20-40

3 = 40-60

4 = 60-80

5 = > 80

6

8. KERNEL (Dried) :

Pericarp Color: 1 = COLORLESS 2 = RED-WHITE CROWN 3 = TAN 4 = BRONZE
 5 = BROWN 6 = LIGHT RED 7 = CHERRY RED
 8 = VARIEGATED (Describe) Bronze from tip to middle of kernel and then colorless to the crown

Aleurone Color: 1 = HOMOZYGOUS 2 = SEGREGATING (Describe) _____

1 = WHITE 2 = PINK 3 = TAN 4 = BROWN 5 = BRONZE 6 = RED
 7 = PURPLE 8 = PALE PURPLE 9 = VARIEGATED (Describe) _____

Endosperm Color: 1 = WHITE 2 = PALE YELLOW 3 = YELLOW 4 = PINK-ORANGE 5 = WHITE CAP.

Endosperm Type:

1 = SWEET (su1) 2 = EXTRA SWEET (sh2) 3 = NORMAL STARCH 4 = HIGH AMYLOSE STARCH
 5 = WAXY STARCH 6 = HIGH PROTEIN 7 = HIGH LYSINE 8 = OTHER (Specify) _____

GM. WEIGHT /100 SEEDS (Unsize Sample)

9. COB:

MM. DIAMETER AT MID-POINT

Strength:

1 = WEAK 2 = STRONG

Color:

1 = WHITE 2 = PINK 3 = RED 4 = BROWN
 5 = VARIEGATED 6 OTHER (Specify) _____

10. DISEASE RESISTANCE (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

<input type="text" value="0"/> STALK ROT (Diplodia)	<input type="text" value="0"/> STALK ROT (Fusarium)	<input type="text" value="0"/> STALK ROT (Gibberella)
<input type="text" value="0"/> NORTHERN LEAF BLIGHT	<input type="text" value="0"/> SOUTHERN LEAF BLIGHT	<input type="text" value="0"/> SMUT
<input type="text" value="0"/> SOUTHERN RUST	<input type="text" value="0"/> CORN SMUT	<input type="text" value="0"/> BACTERIAL WILT
<input type="text" value="0"/> BACTERIAL LEAF BLIGHT	<input type="text" value="0"/> MAIZE DWARF MOSAIC	<input type="text" value="0"/> STUNT
<input type="text" value="0"/> OTHER (Specify) _____		

11. INSECT RESISTANT (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

<input type="text" value="0"/> CORNBORER	<input type="text" value="0"/> EARWORM	<input type="text" value="0"/> SAPBEETLE	<input type="text" value="0"/> APHID
<input type="text" value="0"/> ROOTWORM (Northern)	<input type="text" value="0"/> ROOTWORM (Western)		
<input type="text" value="0"/> ROOTWORM (Southern)	<input type="text" value="0"/> OTHER (Specify) _____		

12. VARIETIES MOST CLOSELY RESEMBLING THAT SUBMITTED FOR THE CHARACTERS GIVEN:

CHARACTER	VARIETY	CHARACTER	VARIETY
Maturity	A554Ht	Kernel Type	LH54
Plant Type	LH54	Quality (Edible)	
Ear Type	LH54	Usage	LH54

REFERENCES:

U.S. Department Agriculture. Yearbook 1937.

Corn: Culture, Processing, Products. 1970 Avi Publishing Company, Westport, Connecticut. (Numerous Authors)

Emerson, R.A., G.W. Beadle, and A.C. Fraser. A Summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 180. 1935.

The Mutants of Maize. 1968. Crop Science Society of America. Madison, Wisconsin.

Stringfield, G.H. Maize Inbred Lines of Ohio. Ohio A.E.S. Bul. 831. 1959.

Butler, D.R. 1954 - A System for the Classification of Corn Inbred Lines - Ph.D. Thesis, Ohio State University.

COMMENTS:

$$GDD = \frac{T_{\max} + T_{\min}}{2} - 50^{\circ}F$$

Exhibit D

Additional Description of the Inbred

'LH61' has some other characteristics that distinguish it from 'LH54'. 'LH61' has salmon color silks during pollination and the silks of 'LH54' are green in color. This difference that can be clearly seen in the photograph is Exhibit B. The leaf angle of the upper part of the plant of 'LH61' is more open and not as upright as that of 'LH54'. The leaf angle of the upper part of the plant of 'LH61' is in the 30 degree to 60 degree range.

'LH61' reaches mid silk 2-3 days earlier than 'LH54'.

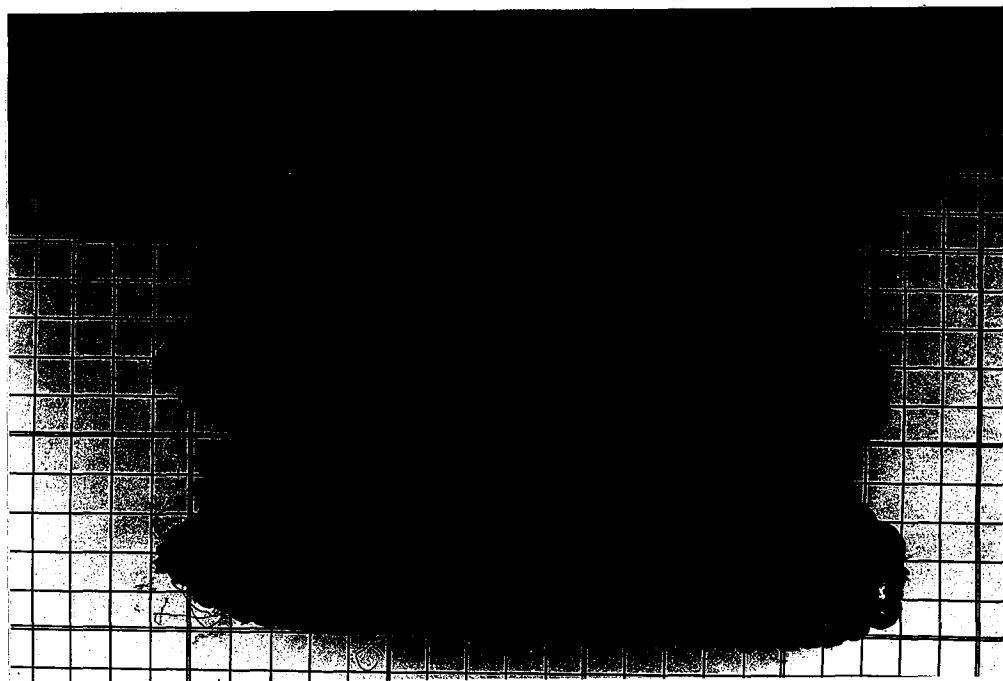


Exhibit D

The glumes of the two inbreds are different. 'LH61' has a green glume with a red ring at the base. 'LH54' has a green glume and the red ring is absent. This difference can be seen in the photograph below. The anther color of 'LH61' is pinkish yellow while the anther color of 'LH54' is plain yellow.



Exhibit E

Statement of Applicants Ownership

Holden's Foundation Seeds, Inc., Williamsburg Iowa, believes it is the sole owner and breeder of the 'LH61' field corn inbred for which it solicits a certificate of protection.